PART 2
GRAND RAPIDS.

GRAND RAPIDS HERALD.

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GRAND RAPIDS, MICH., DECEMBER 1?, 1892.

WHY GRAND RIVER SHOULD BE IMPROVED

Incontestable Arguments in Favor of an Open and Navigable Stream.

SCOPE AND COST OF THE IMPROVEMENTS,

Their Salient Benefits to Trade and Industry Are at Once Apparent.

TO ALL CONCERNED

The Matchless Resources of the City.

RECAPITULATED AT LENGTH

Showing the Volume of Business to be Favorably Affected by a Deep Water Channel.

That old adage: "Necessity is the mother of invention," is applicable to the present effort that is being made for the improvement of Grand river. Competition in trade brought the manufacturers and merchants of this city, several years ago, to a realization of the fact that they were being discriminated against by the railroads in the matter of freight rates. After futile endeavors to get relief from transportation companies, they began to seek deep water connection with Lake Michigan as a sure means of affording relief. At a meeting of the board of trade, held August 13, 1889, the question of the improvement of Grand river was discussed and, on motion, referred to the committee on transportation, of which Charles R. Sligh was chairman, for investigation. The committee took hold of the matter vigorously, and at a subsequent meeting, held September 10, reported to the board the facts as to the official status of the river, which was very discouraging. Three adverse reports to its improvement were on file in Washington.

A Canal Impracticable.

People generally had accepted these reports as substantially correct, and the impression prevailed that our river was useless for deep water navigation. But the committee on further investigation discovered that a complete survey of the river had been made and they inclined to the opinion that the conclusions arrived at by former engineers were incorrect. About this time A. Walsh of Holland, noticing through the press the agitation of deep water navigation, extended September 14, 1889, on behalf of the citizens of Holland, an invitation to the board of trade to drive over a route from Holland to Jenisonville, which, he claimed, could be economically utilized for a canal from Grand Rapids to Lake Michigan. The invitation was accepted and October 1 a large delegation from the board of trade rode over the proposed route with representative citizens of Holland. The feasibility of the plan was so apparent and the impressions were so favorable that, at a subsequent meeting of the board of trade, the committee was empowered to employ a competent engineer to survey the route. This was accomplished during October and, contrary to expectation, showed an elevation between Jenisonville and Holland, for a considerable distance, of over forty feet. As there is not sufficient water available to operate locks this would necessitate a cut of over fifty feet to secure ten feet of water. The expense would be so enormous that this plan was considered impracticable and the project was dropped.

Grand River Inspected.

In the meantime, on October 11, the committee and other members of the board of trade made a tour of inspection down Grand river and were favorably impressed with its possibilities for improvement, so much so that Congressman Belknap extended an invitation to Colonel Ludlow, the United States engineer in charge, to make a trip down the river in an unofficial capacity. He accepted the invitation, and on November 7, 1889, he, accompanied by his assistant, F.W. Lehnartz, and many members of the board of trade, made a second inspection of the river.

Colonel Ludlow, who is an army officer of extensive experience and knowledge regarding river engineering projects, freely expressed the opinion that no obstacle existed to the improvement of the river, but said before he could decide upon the most advisable way to make the improvement it would be necessary to have a complete survey made from Grand Rapids to the lake.

With this opinion from an officer of Colonel Ludlow's prominence, confirming the views held by the committee, the project for the river's improvement was greatly strengthened, and in a report submitted by the committee to the board of trade on the evening of November 12, 1889, a recommendation was made that the "Board formally approve of the river route as a means of deep water communication with Lake Michigan and pledge its earnest support for the accomplishment of the purpose, and provide for a survey." This recommendation was unanimously adopted and a committee, of which John A. Covode was chairman, was appointed to raise the necessary funds.

A Subscription Raised.

The board of trade rooms were filled with members and interested citizens at this meeting and the interest in the subject was so great that $1,300 was subscribed within fifteen minutes, the Hon. T. D. Gilbert leading off with $100. The balance of money required, some $2,000, was afterward subscribed by citizens. Soon after this the river committee, on advice of Colonel Ludlow, contracted with Engineer Mitchell to make a survey. This he immediately set about, completing it in March, 1890. In the meantime the board had requested the war department to direct Colonel Ludlow to submit a report on the river, which he was ordered to do, but was not authorized to avail himself of the survey made by the board of trade. His report, however, was favorable to the improvement, controverting unfavorable reports made by former engineers.

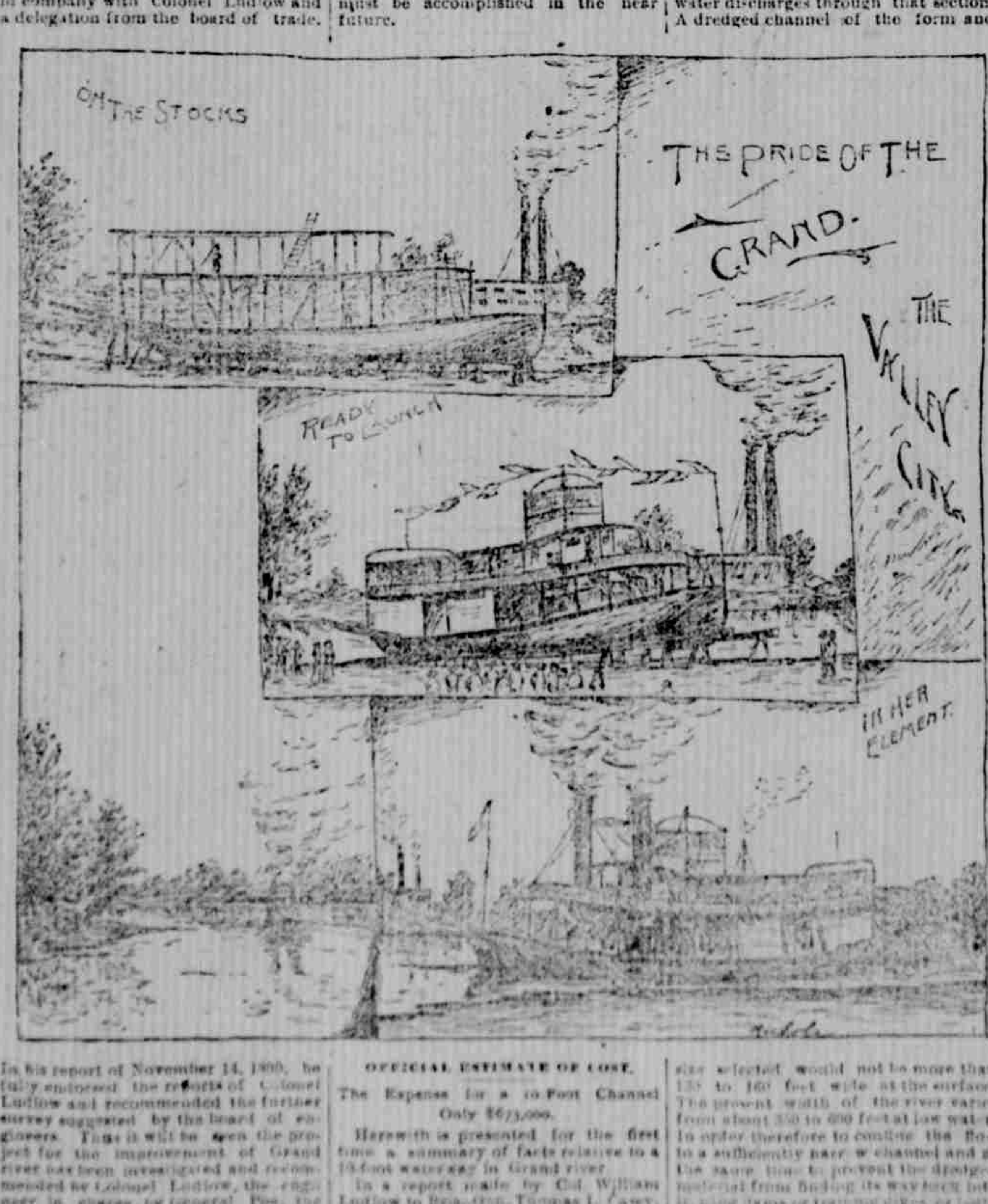
Another effort was made to have the government accept the board of trade survey as official, but General Casey explained that it would be impossible to do this, as it was not a report ordered by congress or the department, and could not be officially acted upon. When this advice was received the board appointed Charles R. Sligh chairman of the committee and the Hon. M. S. Crosby, another member, to proceed to Washington and secure, if possible, favorable action.

The Senate Helps Out.

These men presented the matter to the secretary of war and General Casey without avail, but on advice of General Casey they requested Senator McMillan to secure the passage in the senate of a resolution ordering the department to accept the survey made by the board of trade as official and requiring a report on the same. The passage of this resolution was secured, after some objection by Senator Edmunds, and the survey and all information was turned over by the board of trade to the war department, which promptly referred the matter to the board of engineers, the highest engineering authority in the United States. This board summoned Colonel Ludlow for information, and on April 12, 1890, it reported that Grand river was "worthy of improvement," and that eight feet of water could be secured by dredging, at a cost not to exceed $500,000. It recommended a further survey to determine the "existence or non-existence of underlying rock, the hydraulics of the river and topography of the valley subject to overflow." This was a great victory for the board of trade, as, after three unfavorable reports, it had by persistent effort secured favorable ones by Colonel Ludlow and the board of engineers.

General Poe Reports.

On account of three unfavorable and two favorable reports, the chief of engineers, General Casey, was somewhat perplexed and undecided as to what course to pursue. In September he instructed Gen. O. M. Poe, division engineer, to make a personal inspection, which he did October 29, 1890, in company with Colonel Ludlow and a delegation from the board of trade.



In his report of November 14, 1890, he fully endorsed the reports of Colonel Ludlow and recommended the further survey suggested by the board of engineers. Thus it will be seen the project for the improvement of Grand river has been investigated and recommended by Colonel Ludlow, the engineer in charge, by General Poe, the division engineer, and by the board of engineers, as eminent engineering authorities as there are in the United States.

An appropriation for the survey recommended by the board of engineers and the field work was secured and the work was done during the summer of 1891 under the direction of Colonel Ludlow. His report is very exhaustive and was completed and sent to congress April 11, 1892. He recommended that no dams be built, but that the river be dredged so as to secure ten feet of water from Grand Rapids to Lake Michigan. His estimate of cost for the entire improvement was $670,586, and he recommended that congress appropriate $100,000 to begin the work.

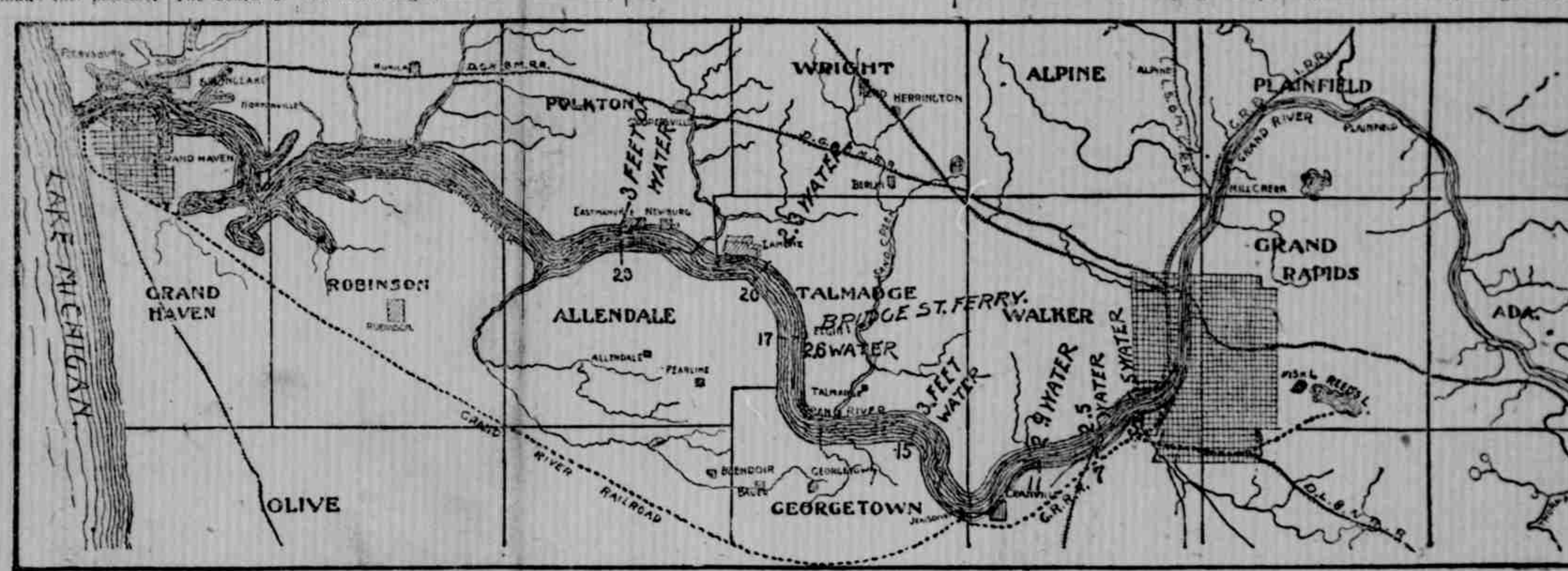
All Controversy Settled.

This report was so thorough that it has settled for all time any controversy regarding the importance, feasibility and practicability of improving Grand river for deep water navigation. Our representatives were not successful in getting an appropriation in the last river and harbor bill and the impression is rapidly gaining ground that the city of Grand Rapids will have to take the initiative in the matter and appropriate money to begin the work. The common council as the guests of the board of trade, made an inspection of the river September 16, 1892 and came to the conclusion which all other sensible men have, that the city must do the work, if the general government will not.

The board of trade has adopted resolutions favoring bonding the city to inaugurate the work, and it is believed the charter will be amended at the coming session of the legislature so as to make this possible. The board of supervisors adopted resolutions January 20, 1890, favoring the improvement. The business interests of the city are all united for it, the laboring men and property owners want it, all broad-gauged and liberal-minded persons favor it, and both the principal political parties have adopted resolutions pledging their support for the accomplishment of it. The local press has done much to help educate the public to the importance of the project, and the board of trade committee has staked its reputation on securing it.

In fact, we are bound to have it.

It is one of the certain things that must be accomplished in the near future.



COURSE OF THE GRAND RIVER FROM GRAND RAPIDS TO GRAND HAVEN.

OFFICIAL ESTIMATE OF COST.

The Expense for a 10-Foot Channel Only $673,000.

Herewith is presented for the first time a summary of facts relative to a 10-foot waterway in Grand river.

In a report made by Col. William Ludlow to Brig.-Gen. Thomas L. Casey, chief of engineers U. S. A., April 11, 1892 (which report is now on file in the war department), the following, relative to a ten-foot open channel in Grand river below Grand Rapids, is taken:

"In accordance with your instructions an open eight-foot channel by dredging and two plans for obtaining a ten-foot channel of navigable width have been considered, one by dredging alone, and the other by dredging supplemented by a dam and a lock. Below the proposed dam and lock these two plans are identical, the required depth to be obtained by dredging and maintained by wing dams and training dykes at crossings and such other places as experience may prove necessary. Estimates have also been made for obtaining an eight-foot channel by dredging. The location in the river of the line along which estimates are made is indicated on the maps.

Slope of the Route.

From Grand Haven to Grandville, about thirty-three miles, the slope assumed for a ten foot dredged channel is 0.000007, or 0.44352 inch per mile, or about the mean existing slope of the river in the lower 27½ miles. From Grandville to Grand Rapids the slope is taken at 0.000011, or 0.69696 inch per mile. For the low-water discharge of the river, as obtained at the gauging above Grandville, the former gives a channel 100 feet wide on the bottom and side slopes of 3 to 1, and the latter a channel 90 feet wide on the bottom and side slopes of 2 to 1. From the nature of the material, as determined by the borings, it is thought that these side slopes will in most places be quite permanent. The 90 and 100 foot width of bottom and corresponding top width of 150 and 160 feet are thought to be sufficient. To dredge this channel will require the removal of 4,000,000 cubic yards, which at 10 cents per cubic yard will cost $400,000.

Such a dredged channel would lower the water at Grandville about 2.1 feet, and at Grand Rapids about 4.6 feet at low water stages, this effect decreasing with higher stages of the stream.

At Grand Rapids a basin large enough to accommodate boats in passing and turning can be obtained by the excavation of about 70,000 cubic yards of material, which at 20 cents per cubic yard would cost $14,000.

In the plan with lock and dam a similar basin can be obtained by the excavation of 40,000 cubic yards at a cost of $8,000.

Wing Dams and Training Dikes.

In determining the inclination and the dimension of the section of a channel that will discharge the low-water flow of the river, the assumption of course is that the entire quantity of water discharges through that section. A dredged channel of the form and size selected would not be more than 150 to 160 feet wide at the surface. The present width of the river varies from about 350 to 600 feet at low water. In order therefore to confine the flow to a sufficiently narrow channel and at the same time to prevent the dredged material from finding its way back into it, wing dams or training dikes, or both, may be required at various places to maintain a channel of requisite depth. Such works would especially be needed at crossings and at a few wide and straight portions of river where small-ing occurs. In the upper length of the river there are eight regular crossings. The lower seven of these, being where only two to three feet of dredging will be required to open a ten-foot channel and in a part of the river where there is little current even at high water, will probably require no particular works, as it will be less expensive and more satisfactory to remove by dredging from time to time any slight shoaling that may occur at these places.

Again, in the upper five miles of river, where five crossings occur and where the project for an open 10-foot channel contemplates the lowering of the bed of the stream at low stage from 2 to 4 feet, and where, too, the material to be dredged is composed largely of clay, coarse gravel, cobblestone and bowlders, it is thought that a proper disposition of the dredgings, supplemented by the encouragement of a willow and other growth on the dredge dumps and portions of the river bed which for low stages will be out of water, may secure a practically permanent channel without the aid of wing dams or dikes. At and in the vicinity of the remaining eight crossings, which are distributed over a distance of about eighteen miles of river and where the material for a large fraction of this distance is largely sand, works more or less extensive will be required to maintain a channel. However, the placing of any such works in the bed of the stream, where they must prove more or less obstructive to ice, etc., and must require an annual expenditure for maintenance, should not be done until other and less objectionable works shall have been proven insufficient or until experience has shown such works absolutely necessary and more economical than other means that could be used to obtain the same end.

After passing the two drawbridges at Grand Haven, it is proposed to pass up the left channel to the middle channel, and thence up the middle channel to the main river channel. The length of this middle channel is about 4,400 feet. It already has a maximum depth of more than 10 feet throughout its whole length, and a mean depth of 10 feet for 100 feet in width in the lower 2,700 feet, and a mean depth of 8 feet for the same width in the upper 1,700 feet. The upper end of this channel should be widened and straightened. The expense would be small and is fully covered by the estimates. After leaving the middle channel the line follows approximately the existing one.

The "Ottawa boom" has been removed, and all logging interests in the river are now at an end. With the exception of the few hundred feet at the head of the middle channel mentioned above, a more than 10-foot channel already exists for 6½ miles above Grand Haven. Above this point as far as the mouth of Bass river, or 9½ miles farther, a 7 to 8-foot channel exists. Above Bass river the depth of channel varies, but excepting at the shoalings and bars given in the following table a 4-foot channel exists to Grand Rapids:

Tabular Statement of the Location of Shoalings and Bars With Less Than Four Feet of Water.

Numb'r	Distances below foot of Ganoe's Canal, Grand Rapids. Beginning.	Distances below foot of Ganoe's Canal, Grand Rapids. End.	Length.	Depth at crossing.
	Feet.	Feet.	Feet.	Feet.
1	0	270	270	3.0
2	800	1,200	400	3.6
3	2,900	3,400	500	3.0
4	4,300	4,720	420	3.9
5	5,5?5	5,900	400	3.5
6	8,200	9,600	1,400	3.0
7	13,500	15,100	1,600	3.5
8	16,400	17,250	850	2.7
9	17,?00	21,300	3,500	2.0
10	24,?30	25,?00	250	3.8
11	27,900	28,0?0	4?0	2.9
12	30,100	30,600	500	3.4
13	39,?00	40,000	600	3.6
14	41,400	43,200	1,800	2.0
15	49,000	50,100	1,100	3.9
16	56,400	56,900	500	3.8
17	74,600	77,100	2,500	2.6
18	77,450	77,?00	250	3.8
19	79,500	80,700	1,200	3.2
20	82,?00	86,?00	4,?00	2.8
21	96,700	97,?00	900	2.7
22	100,000	102,000	2,000	2.8
23	113,900	114,400	500	3.0
Total			27,110	

Cost of the Wings.

As a preliminary estimate it will be assumed that the construction of the equivalent of one mile of pile and sheet piling in the form of wing dams or training dikes, or both, will be required on an average at each of the eight crossings. Such works will cost $2.50 per running foot in place, or about $13,000 per crossing, making a total of $104,000 for the eight crossings. For the remaining ten of the eighteen miles now under consideration, $1,500 per mile or a total of $65,000 may be sufficient to maintain the desired depth, making the total estimated first cost for wing dams and training dikes $169,000. Rather than to expend a much larger sum than this or even the amount in contracting the low water way, it might prove better economy to deepen the dredging to a still greater degree than now estimated for and to rely on annual dredging to maintain the channel. But not until a channel has been opened and the action of the river under its new conditions been observed, will it be possible to determine these points.

No change in the estimates as above given for the dredged ten-foot channel is made in the case of the ten-foot channel by dredging with lock and dam, or in the case of the eight-foot channel by dredging:

Summary of First Cost for 10-Foot Dredged Channel.

Dredging	$400,000
Wing dams and training dikes	169,000
Enlargement of channel to form basin at Grand Rapids	14,000
	583,000
Contingencies, 15 per cent	87,450
Total	670,450

Summary of First Cost, 10-Foot Channel With Lock and Dam.

Dredging	$387,500
Wing dams and training dikes	169,000
Dam	20,175
Lock	51,398
Enlargement of channel to form basin at Grand Rapids	8,000
	585,073
Contingencies, 15 per cent	87,807
Total	672,880

Summary of Cost for an 8-Foot Dredged Channel.

Dredging	$229,000
Wing dams and training dikes	166,000
Enlargement of channel to form basin at Grand Rapids	8,000
	403,000
Contingencies, 15 per cent	60,450
Total	463,450

Stability of the River.

The course of the river is comparatively straight, and most of the bends are made with easy curves. The banks are firm and nowhere show caving or change of any kind. In the bed of the stream little or no movement of material has been observed at low water. The water, too, is clear and free from material carried in suspension. The dam at Grand Rapids provides a settling basin for all such material.

There exists at the present time in the bed of the stream, not far removed from the channel, dredging dumps placed there six or seven years ago. The fact that these have remained, without any effort having been made to confine the material behind the training dikes or to contract the channel width, and that some of them are from two to four feet above low water, and have young willows growing upon them, strongly indicate that a permanent channel, when once formed, can be maintained with small expense.

A comparison of soundings taken in 1884 previous to dredging, and again in 1889, some years after dredging had been done, indicate that, except at crossings, the filling in of the excavated channel has not been great.

The Open Channel Preferable.

The estimated first cost of improvement with lock and dam being somewhat greater than that of the open channel, the inconvenience to navigation of a lock, added to the annual cost of maintaining and operating it, makes the open channel preferable as well as more economical. There is also the following consideration in favor of the open 10-foot channel: The lowering of the river bed 4.5 feet at Grand Rapids, as the plan contemplates, would make a water power there which might be utilized in increasing the already large manufacturing interests of that city. Taking the minimum low water discharge of the river, viz.: 980 cubic feet per second—61,152 pounds per second and 4.5 feet head—we have a theoretical horse power of 61,152x4.5 divided by 550 equaling 500.3, which, with an efficiency of 80 per cent gives 400.2 as the actual horse power attainable.

Allowing five pounds of coal to the horse power per hour, if this power to be used 24 hours a day for 310 days in the year, the quantity of coal to give the same power will be 7,440 tons, worth, at $2.25 per ton, $16,740 yearly. If the power is used only 10 hours a day for 310 days in the year it will be equivalent to 3,100 tons of coal, worth $6,975 yearly. For a large part of the year the available power would be considerably larger, but even this amount, if capitalized at 5 per cent., would justify the expenditure of $334,800 or $139,500, for the open channel in excess of the cost of a channel with lock and dam.

FACTS ABOUT THE CITY.

A Brief Description of Its Use and Present Standing.

The rapids of Grand river are situated about forty miles above the mouth of that stream—the principal watercourse of the state and the largest flowing into Lake Michigan. Fur traders found a small Indian village at the foot of the rapids about 1820, and a log hut or two was erected by them previous to the coming of a small party connected with a Baptist mission. A postoffice was established here and the name of Grand Rapids conferred upon it in 1832, which name was confirmed by the legislature in 1838, when the place was incorporated. The rapids are formed by the passage of the waters over a rough limestone bed for a little more than a mile, with a descent of eighteen feet, and form a perpetual barrier to navigation, though the river below has been utilized for that purpose since time out of mind, first by the Indians in their canoes, later by the whites, at first employing batteaux and keel boats and steamers later on. Though many millions of logs have been floated out when freshets served, only very light draught steamboats have as yet been seen at the city wharves. However, this feature of our subject is more fully treated further on, and we shall in this place confine ourselves to an account of the development of the frontier trading post and mission into a bustling manufacturing and commercial city.

The First Houses.

The first houses built for the occupation of white men were two log cabins erected by Louis Campau in 1827, and utilized by him for a number of years as a home and store, he being a regularly appointed Indian trader, coming here in November 1826. He was joined a few months later by three brothers, and these men were the first whites to make a permanent settlement on this spot. Louis died in 1871, aged eighty, and his brothers followed within eight years, all at ripe ages, moderately wealthy, and universally respected. In the spring of 1833 the first regular colony, composed of sixty-three men, women and children from Herkimer and Oneida counties, N. Y., arrived at Ionia. Louis Campau at once persuaded Joel Guild to bring on his wife, six daughters and a son and take up land near the rapids. Mr. Guild at once erected the first frame house on the present city site, about the junction of Monroe and Pearl streets so that the Guilds were the pioneer Anglo-Saxons of Grand Rapids, the Campau's being of French extraction, though natives of Detroit.

Notwithstanding the check caused by the speculative panic of 1837, the increase of population continued, principally by immigration, the name of Grand Rapids having been formally conferred by the legislative act of incorporation dated April 5, 1838. The manufacture of salt (from brine obtained by boring), and of plaster from the gypsum deposits at Plaster creek, was begun in 1841. The east side canal was completed in July, 1842, at which time power was supplied for two flouring and one sawmill, though there were several of the latter above the village, along the rapids. A foot bridge across the river was also built that year. Merchandise from the east via the Erie canal, the lakes and Grand river began to arrive in quantities that year. A woolen mill was erected in 1843.

The First Bridge.

A company was organized in 1844 to build a free bridge, and was subsidized by a legislative grant of 6,000 acres of land. The original court house and jail were burned July 12 of that year. The river steamer Empire was built here complete—engines and all—in 1845, and, with another similar craft, formed a regular line to Grand Haven. The free bridge was completed that year, and a local census was taken, showing a population of 1,510. A river and harbor convention, held at Chicago July 5, 1847, was attended by a Grand Rapids delegation numbering thirty-six persons.

The city of Grand Rapids was incorporated April 2, 1850; the charter was ratified by an election held May 1, and on the 11th of the same month a second election was held for city officers. Five stage lines were in operation this year, running coaches daily to and from Lansing, Battle Creek, Kalamazoo, Jackson and Muskegon, which, with the steamers on Grand river, furnished excellent traveling facilities for that time, though shipments, principally of land plaster, were confined to the river route. Except the steady growth in population and commercial importance little of interest occurred in Grand Rapids until 1853, when the railroad agitation began. A new steamboat—the Michigan—was launched March 22, and Powers & Ball built and started a large steam sawmill. The year 1854 was marked by the first steamboat explosion on Grand river—that of the Humming Bird—by which a boy was killed and one man permanently disabled.

The Newspapers.

Previous to 1855 there were two weekly newspapers here—the Times and the Enquirer. In that year the first daily was issued. The Grand Rapids and Kalamazoo plank road was completed this year. Considerable boat-building was done in 1856. A toll bridge was built at Leonard street in 1857, street improvements were greatly pushed, and November 12, for the first time, the thoroughfares was lighted by gas. April 5, 1858, the Bridge street bridge and several factories burned. Trains began running regularly on the Detroit, Grand Haven & Milwaukee railroad July 13; on July 12 ground was broken for the Grand Rapids & Indiana railroad; August 26 the D. G. H. & M. railroad bridge was finished, and the lattice bridge at Bridge street was opened for traffic September 4. On the 14th of the same month the first line of telegraph was formally opened to Detroit. The Leonard street bridge and the Pearl street bridges were opened respectively on the 21st and the 25th of October.

Land plaster shipments by rail began in 1859, which was a busy year, buildings to the value of $156,000 being erected. The steamer Michigan burned July 11, 1860, a year noted for destructive fires.

Growth in War Times.

The period from the spring of 1861 to that of 1865 was here as elsewhere one of feverish excitement by reason of the civil war; yet, notwithstanding the pressure to meet the demand for men and means, business continued good; the city grew in population and wealth; improvements were pushed with greater energy than ever before, speculation was rife; business booming, money plentiful and, save for the frequent war meetings, the raising of bounty funds, the constant enlistments and the departures